The dual frequency Synthetic Aperture Radar (DFSAR) a microwave imaging instrument, is configured with L-band (1.25GHz) and S-band (2.5GHz) SAR systems with resolution capability from 2m to 75m (slant-range). It is designed to operate in fully-polarimetric and hybrid-polarimetric modes to enable unambiguous detection of water-ice on the lunar poles. The unique combination of simultaneous L- and S-band polarimetric SAR operation is expected to provide quantitative estimation of water-ice over the lunar-poles. Chandrayaan-2 Dual-Frequency SAR is bringing out lunar surface and sub-surface physical characteristics by operating in various modes, such as: High resolution with 2m slant-range (one-order better than previously flown lunar-radars), Full-polarimetric mode (first-ever in any planetary mission), L-band hybrid-polarimetry (first L-band operation on the Moon).

CHandra's Atmospheric Composition Explorer-2 (CHACE-2), is a quadrupole mass spectrometer based payload in the orbiter segment of the Chandrayaan 2 mission of India. The scientific objective of this instrument is to study the neutral composition of the tenuous lunar exosphere. The CHACE-2 instrument, apart from having a quadrupole mass filter, also has a Bayard Alpert gauge to measure the total pressure. CHACE-2 derives its heritage from the MENCA payload aboard the Mars Orbiter Mission.

The Dual Frequency Radio Science (DFRS) experiment aboard Chandrayaan-II uses communication channel between Orbiter and ground in Radio Occultation mode to study the temporal evolution of electron density in the Lunar ionosphere. It consists of a highly stable 20 MHz EMXO source, having a stability of the order of 10-11, which generates two coherent signals at X (8496 MHz), and S (2240 MHz) band of radio frequencies. The coherent radio signals, transmitted simultaneously from satellite, and received at ground based deep station network receivers would be used to study temporal and spatial variations

in the Lunar ionosphere. the major science objectives of the experiments include, (a) to study the variations in the ionosphere/ atmosphere at Moon , (b) to explore if the Ionosphere at Moon is omnipresent or has episodic appearances and, (c) to confirm the source of the ions in the lunar ionosphere, whether dusty or molecular ions. According to the experiment, every two hours we will get one ingress and then one egress observations.

PROPOSED RESEARCH WORK:

- To study elemental distribution of minerals on Lunar Surface
- To study the hydration features on the Lunar Surface.
- To study the role of Meteor Impacts on Minerological Diversity on Lunar Surface

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